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TELECOMMUNICATIONS POLICY,
RESEARCH AND DEVELOPMENT

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27 September 1982

WORLDWIDE REPORT
TELECOMMUNICATIONS POLICY, RESEARCH AND DEVELOPMENT

No. 240

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LAOS

BRIEFS

WIRE RADIO ASSISTANCE--The Ha Nam Ninh radio station has completed building for our Lao friends a wire radio station in Muong Sai City, Oudomsai Province, Laos. This is the first wire radio station ever built in this province. It has 100 sets of 750-watt output and a 32-km long wire network. Workers and cadres of the Ha Nam Ninh radio station, while doing the survey and building the wire station, have also helped with the training of Lao technical workers and editorial personnel to ensure the smooth operation of the station. They have been awarded the friendship medal by the LPRP Government. [BK070345 Hanoi Domestic Service in Vietnamese 2300 GMT 4 Sep 82 BK]

CSO: 5500/5917

PEOPLE'S REPUBLIC OF CHINA

BRIEFS

GUANGDONG BUYS TELECOMMUNICATIONS SYSTEM--China on September 7 signed a 10 million pound (US\$17 million) contract with the British company Cable and Wireless to help construct a microwave telecommunications system covering the entire Guangdong Province in China. Beginning in 1984, the new network will link Guangzhou, the capital, with the oil prospecting centres on the island of Hainan to the west, and in 1985, with Shantou, a principal economic zone in the eastern sector. It will also service cities located in between the two furthest sectors. The system will be capable of simultaneously transmitting 960 telephone conversations and a colour television program. By linking it to the microwave line now under construction between Guangzhou and Hong Kong, the network will connect cities in Guangdong with Hong Kong. The multimillion dollar contract was signed by Eric Sharp, managing director of Cable and Wireless, and Li Gingwan, administrative director of the Post and Telecommunications Bureau in Guangdong. [Text] [HK090157 Hong Kong TA KUNG PAO WEEKLY SUPPLEMENT in English 9-15 Sep 82 p 12]

CSO: 5500/4025

THAILAND

BRIEFS

SOUTHERN TELEVISION EXPANSION--The Radio and Television Administration Committee has approved the request of army color television Channel 7 to increase its coverage area in the southern border provinces. The station's transmission power at its relay station in Hat Yai will be increased by connecting two 10-kilowatt transmitters in parallel and boosting its antenna's emission power. [Bangkok Domestic Service in Thai 1300 GMT 14 Jul 82 BK]

TELECOMMUNICATIONS ACCORD WITH JAPAN--The Communications Authority of Thailand and Japan's Nippon Telegraph and Telephone Public Corporation have agreed to promote exchange of telecommunications technology. Under a memorandum signed recently, the two semigovernmental organizations, apart from exchange publications on telecommunications technology, will also exchange visits by their officials, hold seminars and conduct joint research on themes of mutual interest. The agreement is for 2 years, but it will be extended automatically unless either side notifies its wish to terminate the agreement. [BK100923 Bangkok Voice of Free Asia in English 1100 GMT 9 Jul 82 BK]

CSO: 5500/5917

THREE MORE SATELLITE DISHES WILL BOOST MEDIA COVERAGE

Hamilton THE ROYAL GAZETTE in English 20 Aug 82 p 3

[Text]

Plans by the local media to erect three more satellite dishes are expected to result in better international news coverage and more live television programmes.

The Development Applications Board has approved plans by The Royal Gazette Ltd. to erect a satellite dish on the roof of its building on Par-la-Ville Road, while the Bermuda Broadcasting Company, owner of ZBM and ZFB radio and television stations, has applied for planning permission to erect two satellite dishes in Prospect.

ZBM currently has one satellite dish, which transmits AP Radio News and the Independent Network News.

Mr. Keith Jensen, General Manager of The Royal Gazette Ltd., said the newspaper's satellite dish, expected to cost \$20,000, would be erected within three months.

Explaining why the company is purchasing the dish, he said: "It will give us the

opportunity to improve our services. It will give us the facility for high speed wire services at a reasonable cost."

"It will," he went on, "provide us with more immediate news coverage of international events and has the potential for a vast amount of choice."

He added that regular features, such as Ann Landers, which are now received in the mail could potentially come through the satellite.

Currently, international news from Reuters and United Press International is received by cable. The erection of the satellite dish with its ability to transmit news quickly and more cheaply will eliminate the need for obtaining news by cable.

But for the time being the newspaper would continue to use the cable transmission as a back up and for the use of a wire service that provides information about Caribbean sporting events, such as cricket.

If the Bermuda Broadcasting Company receives

Planning Department permission to install its dishes, Bermudians can in the future expect to tune into ABC and CBS television programmes at the same time or merely hours after they appear in the United States — a big improvement over the current one week's delay.

According to Mr. Gladwyn Doars, chief engineer at ZBM, the station's satellite is locked into one position to keep track of AP and Independent Network news.

One of the proposed satellites is expected to take over the function of the present satellite, which will then be unlocked and allowed to revolve to give it the flexibility to pick up live events.

The third satellite will be used for the transmission of ABC and CBS television programmes, but Mr. Doars stressed that the company is merely preparing itself for that eventuality.

CBS and ABC are not available on satellite at present, he said.

COLOMBIA

BRIEFS

ARCHIPELAGO TELEVISION STATION--Beginning on 7 September, the inhabitants of San Andres and Providencia Islands will have two TV networks. On one of them the programs that are seen on the continent will be broadcast, and on the other a selection of the best programs of the second continental network will be shown. Gustavo Castro Caycedo, director of the National Institute of Radio and TV (Inravision) said that this was decided upon on the basis of an opinion survey of the majority of the inhabitants of the islands conducted by means of interviews, telephone and mail. Previously, programs were specially edited in Bogota and sent by air to the Simon Bolivar Station in San Andres. Later it was decided that the entire programs of the first network would be sent. Now, under the new administration, a system has been devised which, without increasing the expenses, will give the TV viewers two choices. Equipment not being used has been put into condition to provide this new service. This will result in a greater degree of integration of the islanders with their fellow countrymen. A similar opening survey procedure has been launched in Leticia, capital of Amazonas. [Text] [Bogota EL TIEMPO in Spanish 23 Aug 82 p 7-A] 9204

CSO: 5500/233

TELECOMMUNICATIONS AGREEMENT REACHED WITH ITU

San Jose LA NACION in Spanish 5 Aug 82 p 29 A

[Text] The International Telecommunications Union, ITU, will provide Costa Rica with technical assistance to enable it to maintain sovereign control over radio broadcasting and prevent the penetration of transmission from neighboring nations.

The agreement was reached during the negotiations in Costa Rica between Richard Buttler, deputy secretary general of ITU, and journalist Armando Vargas Araya, minister counselor for information.

To begin the work, the UN will send Carlos Romero Sangines, one of the best known consultants in America and director of telecommunications of Peru.

Romero will visit the northern area in order to study and technically evaluate the penetration of radio and TV broadcasts from Nicaragua.

At the same time a high level Costa Rican committee will be formed consisting of experts from the Telecommunications Directorate of the Costa Rican Electrical Institute, ICE, and of the Secretariat of Information of the Government of the Republic.

This group will assemble the information which will provide the basis for the work which Romero will do later.

When the study is completed, the government will have talks with friendly nations to obtain the necessary resources to carry out the recommendations made by the experts.

As a preliminary step, a working meeting was held by experts of the Secretariat of Information and of ICE including David Peralta, Armando Acuna, Marco Tulio Delgado, Nestor Calderon and Teofilo de la Torre, executive president of that institution.

SINART

Part of the project is an agreement for technical collaboration between ICE and the National Cultural Radio TV System, SINART.

They plan, through the use of repeaters, to extend the radius of action of the Radio Nacional and Channel 13 signals. In principle, it was agreed that ICE will do the broadcasting and will be in charge of all technical aspects of transmission.

This will allow SINART to be free of all technical matters and to concentrate on the production of messages sent over the state media.

The Information and Communications Council of the government will probably study the report on the agreement between ICE and ITU in order to solve the problems of radio broadcasting sovereignty.

Next year a meeting called by ITU will be held in Mexico to analyze signal interference between nations.

The participants of this meeting will be primarily from the Caribbean countries, and an effort will be made to arrive at a definite solution for the problems of this type of interference.

9204

CSO: 5500/2327

ANTEL INAUGURATES SHORTENED DIALING SYSTEM

San Salvador LA PRENSA GRAFICA in Spanish 21 Aug 82 pp 5, 11

[Text] The First Digital Telephone Exchange with Shortened Dialing System, the first in Central America, was entered into service yesterday by Dr Alvaro Magana, president of the Republic.

Col Nicolas Carranza Jr, president of the National Telecommunications Administration, ANTEL, said yesterday at the inauguration that "Centro III", as it is called technically, is the greatest advance in telephone commutation technology since 1966. It has 6,144 lines of subscribers which in its initial stage can be increased to a maximum of 30,000 lines as things stand at present.

He then said that it will also function in "a tandem arrangement and as a central exchange."

He said that this will be the case for the remote units in Atlacatl, Soyapango, Ciudad Arce, Zacatecoluca and the America settlement which will be installed soon.

He said that this type of telephone exchange will offer the telephone subscribers a number of special services which are only possible with this technology.

Digital Dialing

The "Shortened Dialing" service, he said, allows the subscriber to call another subscriber by dialing only one or two digits. The subscriber can choose the numbers which he calls most frequently and set them in and replace or eliminate them at will on the shortened dialing list from his own telephone. Col Carranza Jr. explained that the numbers on the list may be local, domestic or foreign. The subscriber can have a minimum of five numbers which can be increased, in increments of five, up to a total of 100 numbers.

He added that the "call transfer" service allows the subscriber to transfer incoming calls automatically to another number in the city. For example, if a businessman has a telephone number in his office and is expecting a business call, when he leaves for home he can program the business telephone so that the calls that he is expecting at that telephone, instead of being received there, will be received on his private telephone or vice versa.

The ANTEL president said that in addition to the previously mentioned services, the new system provides hold calls, conference calls and direct line calls.

Finally, he added, for any country aspiring to progress, the development of a modern telecommunications system is of undeniable importance in stimulating productive sources. He ended by thanking all the former officials of ANTEL who initiated this project.

9204

CSO: 5500/2334

AFGHANISTAN

BRIEFS

DAILY BROADCASTS TO REFUGEES--New Delhi, 29 Aug (AFP)--The Soviet-backed Afghan Government has begun a 2-hour daily broadcast over the state-controlled radio to try to coax back an estimated 4 million Afghan refugees who fled the country after Moscow's armed intervention in December 1979. The broadcast, which began Friday with the Muslim holy prayers, is specially aimed at Afghanistan's eastern neighbour, Pakistan, which has given shelter to more than 2.7 million refugees, said Indian broadcasters who monitor Afghan radio. The broadcast can also be heard clearly in Iran, which has a large number of Afghan refugees, and India. "The broadcasts for Afghans abroad will explain the lofty aim of the Sawr (April 1978) revolution and disclose the atrocities of the agents of imperialism and plots concocted by them at the instance of their masters," Kabul radio said last night in formally announcing the broadcast. The broadcast is seen by diplomatic analysts here as part of a Moscow-engineered campaign to win back the refugees, who have drawn international attention and have been aiding Muslim insurgents fighting the government of President Babrak Karmal. [By Dilip Ganguly] [Excerpt] [BK290935 Hong Kong AFP in English 0906 GMT 29 Aug 82]

CSO: 5500/5350

ALGERIA

TAMANRASSET AND BATNA TELECOMMUNICATIONS NEEDS DISCUSSED

Tamanrasset Telecommunications

Algiers EL MOUDJAHID in French 23-24 Jul 82 p 4

[Excerpts]

A Space Telecommunications Center

Since 1976 Tamanrasset has known a real communications boom owing to installation of the most modern communications equipment.

Before then, the wilaya was linked by radio; but today, thanks to ground stations, it benefits not only from telephone and telex facilities, but also from radio and televised news distributed by RTA [Algerian Radio and Television].

The Tamanrasset space radio and telecommunications center permits operation of 16 telephone and telex circuits, which can be extended to 32.

In January 1982, two long lines were made available to subscribers. These lines link the internal net of the wilaya's chief town to the integral automatic system.

In addition, specialized circuits link Tamanrasset to the daïra of In-Salah and to the Ouargla center. These latter serve as relays, and because they are linked to the integral automatic system, they permit fluidity of traffic routing at times of peak load.

For telegraphic connections, Tamanrasset wilaya is now equipped with three harmonized beams of 24 telex channels; thus each of them can meet the needs of 72 subscribers.

At In-Salah as at Tamanrasset, the ever-growing demand for that mode of communication has necessitated installation of a third harmonized beam, which is in process of completion.

Ten isolated localities have been linked by radio and air transport to Tamanrasset. They include In-Guezzam, Tmiaouine, Tin-Zaouatine, Silet, Abalessa, Idless, Tazrouk, Amguid, and In-Amguel. The latter two links are not yet operational. Zaouia is linked to In-Salah by air service, and a link with El-Barka is in process of completion.

Telephone: 1,400 Subscribers

Telephone usage by localities in the Tamanrasset area is faced by the problem of non-availability of electricity, so much so that service functions for 3-hour periods by means of small generators.

Under a special southern area program it has been decided to install six ground stations intended to serve the border localities of In-Guezzam, Timiaouine, Tin-Zaouatine, and Abalessa to the west, and Idless and Tazrouk to the east of Tamanrasset.

Once completed, those stations will not fail to give satisfaction to the inhabitants of those localities through their television and radio broadcasts. The wilaya will then be almost completely covered by audiovisual as well as telephone, telex, and telegraphic facilities.

Also programmed is a link with In-Salah by hertzian beam, which will bring the daïra of Tamanrasset into the integral automatic net, so that it will finally emerge completely from its isolation.

Those satellite circuits (radio and hertzian beams) will permit service to some 1,400 subscribers throughout the wilaya.

The Tamanrasset central has a capacity of 1,000 lines and is operating at 90 percent of full load. It cannot at present be expanded because of the small size of its premises.

Under the five-year plan a central to handle 10,000 lines is envisaged to meet the needs of the capital of the Hoggar, of which nearly 400 service requests are being acted on. As for In-Salah, it has a 500-line exchange now operating at 95 percent of capacity; it is planned to expand it to 1,000 lines.

Those exchanges, and particularly that at Tamanrasset, are faced with a human problem: the very transient character of personnel in positions as inter operators. In other services such as accounting, telegraphy, and subscriber services, personnel is more homogeneous and stable, for the simple reason that employees assigned to such posts are for the most part from the region, and all have had the advantage of training in other wilaya administrations in the northern part of the country.

With regard to upper level personnel and supervisors, conferences and competitions for access to that group have been organized, and have made it possible for 11 employees from Tamanrasset to take training at the Oran Technological Institute. They will take up their duties next September.

The very decrepit network of lines was installed in 1969 to serve 35 subscribers. Today, with 1,700 subscriber lines, it operates at 95 percent of capacity.

Personnel Turnover

That problem of saturation is almost solved for In-Salah, where conduits are completed. All that remains to be done is permutation and extension of those lines in underground cables.

At Tamanrasset, conduits are 50 percent completed, and new networks, when completed, will put an end to the very frequent problem of malfunctions in subscriber lines.

In addition, phone systems for the localities of In-Ghar and Foggaret Ezzoua (In-Salah) as well as In-Guezzam and Abalessa (Tamanrasset) are under study. In those distant localities demand for service is at its strongest, and connecting those new subscribers is most urgent and necessary. Line service is experiencing a lack of human resources which is an acute problem. Personnel trained as linesmen by the Posts and Telegraphs is very quickly absorbed by other firms. Their leaving is due to several factors, including pay. Nevertheless, the majority of that service personnel was replaced in October 1981.

Maintenance of equipment at telephone exchanges, including radio centers, ground stations, and hertzian beams, is controlled from day to day by technicians at the wilaya centers.

The operations management of Ouargla telecommunications center, for its part, conducts every two to three months a complete maintenance cycle for all equipment at transmission and switching centers and emergency power stations. In addition, in April 1982, 10 lines storage sheds were acquired. One was fitted out as a lecture hall for continuous training, in their native tongue, of Posts and Telegraphs employees from Tamanrasset. Organization of all materiel for lines and installations, as well as construction and transportation services, was taken up within the other sheds.

Formerly, all such materiel was exposed to the open air, or stored in a courtyard equipped as a depot within the management premises. The same type of sheds is planned for In-Salah. A consumers' cooperative and cafeteria were opened to Posts and Telegraphs employees in 1980. In addition, a social center is under construction and soon to be accepted. That complex, with a capacity of 50 beds, will include a club room, infirmary, library, and kitchen. A social services committee has been elected.

Each year, vacation centers are organized for children of all workers in the wilaya. They are sent to one of the three Posts and Telegraphs vacation centers at Les Andalouses, Meftah, or Dellys.

Batna Phone Center

Algiers EL MOUDJAHID in French 23-24 Jul 82 p 4

Excerpts Batna daira presently records 5,000 phone service requests which cannot be met. The 5,000-line exchange is operating at full capacity. Subscribers must be very patient, especially during periods of peak demand, to communicate with Annaba or Constantine.

Opening of a second exchange with a capacity of 10,000 lines is planned for the second quarter of 1983, and will momentarily solve the telecommunications problem, but even now, with the constant growth of the city of Batna, it is time for the posts and telegraphs administration to think of building a 20,000-line exchange, which would iron out all difficulties experienced in this field.

The telegraphic center is also operating at full capacity. To meet the ever-growing needs of state corporations, offices, and enterprises, and to palliate the most urgent, the wilaya posts and telegraphs administration has had to route a few subscribers through Constantine. In accordance with the 5-year plan, 100 additional lines will be operational by the first quarter of 1983.

Other dairas in the wilaya, all of which are linked to the national network, are experiencing a problem identical with that of Batna. Telephone exchanges in operation find it very difficult to meet a constantly growing demand.

To palliate the shortcomings of the existing telecommunications infrastructure, the posts and telegraphs administration has benefited from inclusion of many operations in the 5-year plan. Thus the Ain-Touta telephone exchange, with a present capacity of 500 lines, will be expanded to 1,000 in an initial phase, and will reach a 2,000-line capacity by the end of the 5-year plan.

The Barika exchange will be expanded initially to the same extent as that of Ain-Touta. Construction of a second exchange in the city of Hodna is a necessity in view of the steadily growing importance of that city, which lies at the convergence of four wilayas (Batna, Bisra, M'sila, and Setif). The telephone exchange at Kais, with a present capacity of 500 lines, will be extended to 1,000 by next August. Those at N'Gaous, Merouana, and Arris will be expanded during the 5-year plan, which also provides for equipping the communes of Timgad (Batna daira), Menaa (Arris daira), and Tazoult (Batna daira) with 500-line telephone exchanges.

All those projects will be complemented by facilities to link important dairas and communes of the wilaya to the national network. To break the isolation of remote populations in the wilaya, it is planned to connect 95 localities, resettlements, and centers, in order to put the telephone within reach of all citizens. The posts and telegraphs administration has made a remarkable effort by installing many public booths to insure the success of this operation. Certain citizens are to take charge of those facilities.

SAUDI ARABIA

BRIEFS

TELECOMMUNICATIONS--Riyadh, 26 Aug (OPECNA)--Saudi Arabia has agreed in principle to participate in an international telecommunications project linking the Middle East, Europe and the Far East by an intercontinental submerged cable system. Zuhayr Musallam, director general at the Saudi Ministry of Post, Telephone and Telegraph, said the system would provide telephone and telex services to at least 50 countries in the three regions. He said a draft agreement on the construction, operation and maintenance of the project would be finalized shortly. At a recent meeting here between Saudi Arabia, Singapore, [words indistinct] Sri Lanka, Djibouti, Egypt and Italy to participate in the project, since these countries could provide landing points for the network. [Text] [LD081304 Vienna OPENCNA in English 1920 GMT 26 Aug 82]

CSO: 5500/4735

SOUTH AFRICA

BRIEFS

NEW RADIO SERVICE--The South African Broadcasting Corporation [SABC] will introduce its ninth radio service in the language of one of the country's black communities on 1 April next year. A commercial service, including news bulletins, known as Radio Ndebele, will be broadcast mainly to the 380,000 members of the south Ndebele community for three hours daily from the FM transmitters in Nylstroom in the Transvaal. The service will be extended when the necessary facilities become available. The SABC also broadcasts internal English and Afrikaans programs, national and regional commercial services, as well as Radio RSA on shortwaves. The corporation has announced that it has given the South West Africa Broadcasting Corporation nearly 6.5 million dollars to improve the radio services in the territory. [Text] [LD101035 Johannesburg International Service in English 1500 GMT 9 Sep 82]

CSO: 5500/5912

INTERNATIONAL AFFAIRS

FRANCE, LUXEMBOURG DEBATE USE OF TV SATELLITE

Intergovernmental Conference 19-20 July

Paris LE MONDE in French 27 Jul 82 pp 1, 19

[Article by Frederic Edelmann: "Toward a European Truce?"; first of two related articles by same author published under general heading "Battle of the Television Satellites"]

[Text] After a phase of hard-core talks on European television satellites, marked notably by the set positions of the French government and the threats of the Luxembourg government to release the frequency available on a satellite of its own to an American group, the statements made to us by Mr Jacques Thibau [see second article] indicate that the time has come to negotiate.

On 19 and 20 July, in Paris, at the initiative of the French government, an inter-governmental conference was convened to "open the way for a cooperative European audiovisual space."

The debates, in which--besides France--the FRG, Austria, Belgium, Luxembourg and the Netherlands all took part, centered on the issue of television satellites. According to Mr Thibau, former deputy director of French television, a member of the Moinot Commission, and now, since December, entrusted by the prime minister with heading the French negotiations on television satellites, the outcome of this conference was the shaping of a start toward genuine European cooperation.

Without prejudging the future results of these negotiations, one can only hope for and urge a degree of clarification of policies and decisions relating to these satellites.

From a practical, that is, a technical, standpoint, plans are proceeding on course. Mr Jean-Pierre Chevenement, minister of research and industry, and his West German counterpart, Mr Andreas von Bulow, have just approved the contract

providing for the construction, by a Franco-German group, and the launching, in 1985, of the first French TV satellite, TDF 1, and of the first German one, TV-SAT; two other similar, 3-channel satellites are to be launched soon thereafter.

From the theoretical standpoint, that is, the political, commercial and cultural, things are less simple. Before the results of the 19-20 July conference were known, a fortiori BR [as published] those of the fall conference, Mr Georges Fillioud, minister of communications, had advanced as the "most realistic hypothesis" the creation of a "commercial channel" (a public-sector channel, he specified, with possible concessions later), financed by advertising and, of course, transmitted by satellite.

In pitting this plan, in a way, against other "unscrupulous" plans, he drew a response from Luxembourg's Prime Minister Pierre Werner, who saw in these words an attack against his country's plans and those of the CLT [Luxembourg Television Broadcasting Company].

To be perfectly frank, as long as Great Britain or Switzerland, both of whom also have "offensive" plans from a commercial standpoint, are not in a hurry to negotiate what they already own, Luxembourg is in a fortunate position vis-a-vis France, an interested partner, through the Havas Agency, in the CLT.

When under the previous French government the CLT tried to obtain the concession on the third channel of the French satellite, preference was accorded to a MATRA [Mechanics, Aviation and Traction Company]-Europe 1-Hachette channel of our own. Having since then decided to launch its own satellite, the CLT has encountered hesitations on the part of one of its principal stockholders--France. As of now, a truce seems to be taking shape.

European Cooperation, Constraints

Paris LE MONDE in French 27 Jul 82 p 19

[Interview with Jacques Thibau, former deputy director of French television, now conducting French inter-European TV satellite talks, by Frederic Edelmann: "A True European Audiovisual Space Must Be Created"; second of two related articles published under general heading "Battle of the Television Satellites"]

[Text] "In August 1981," Mr Thibau said to us, "the government received a very urgent request from Luxembourg and the CLT [Luxembourg Television Broadcasting Company], who wanted a green light from France for their satellite project. It was a very ambitious project. It had been drawn up based on an American study urging Luxembourg to adopt a violently offensive strategy with the aim of being the first to reach the market and to occupy the terrain. It threatened to punch a big hole in the advertising market.

"France reacted swiftly. In November, it indicated to the government of Luxembourg that it was not prepared to accept anything whatever, but much less a project that posed a threat to the internal balance of the media in France and that would make a mockery of France's cultural policy as a whole.

"Luxembourg, for its part, became more and more aware of the difficulties and financial risks involved in its program. And above all--it is evident now--it became clear that such a satellite would immediately touch off a fantastic commercial war in Europe. Luxembourg's error was to think it could, with an accommodating neutrality on the part of France, undertake a conquest of the advertising markets without incurring a reaction. The Luxembourgers are now deeply disillusioned. But while they place the entire blame on our shoulders, they fully realize at the same time that we are not their sole obstacle."

[Question] Luxembourg was your most immediate concern, but your mission was much more vast.

[Answer] We had to see how the other Europeans view the satellite question. Talks have commenced. Essentially, with the Germans, since here, as in other domains, a broad cooperative effort cannot be mounted without a basic Franco-German agreement. The Germans were split. There were those who felt that it was all hardly worthwhile--this was the case of Willy Brandt and of Helmut Schmidt--and that everything that is technically possible is not necessarily humanly desirable. Why create new programs, they ask themselves, when we have all we can do to manage those we already have. On the other hand, I have found, in Germany as elsewhere, those devoted to modernity, to technology, those who believe in the importance of these to industry and commerce.

Thus, during the negotiations, I encountered two attitudes: The view that there is not much we can do, that the new technologies are in any case going to overrun Europe; but also the conviction that a commercial war to the death among all these satellite projects must be prevented. Between France and Germany, at least, it has become clear that it was a mistake to launch the common satellite program without having priorly concerned ourselves with its eventual impact on the various media as a whole and on their closely allied domains.

The attitude of fear and skepticism among the Europeans evolved at the same time that the Luxembourgers were gaining an understanding of the limitations of their plan. They all came to recognize that the problems must be examined together. For, the same deep-rooted problems with respect to the audiovisual sphere, the same lack of coherence, the same financial difficulties, are being encountered everywhere. At this point, none of these countries, whatever it may desire or do, is in a position of being able to adopt a protectionist attitude, and most of them are therefore prepared to "let the information circulate." To preserve contradistinctions of national production--whether it be in the audiovisual domain or that of the cinema or the press--to fortify their specificity, their "cultural identity" as some like to call it, the countries must address the problem together. To share this view of things is already a considerable forward stride. It remains to be seen who will decide: The European institutions, the governments or even the television organizations, since the latter are very independent in certain countries. In any case, everyone shares the very clear view that procedures must be set up to cooperate and create a true "European audiovisual space," lacking which, each will eventually find himself short-allowanced.

[Question] These "views," these "convictions"--do they really have a future?

[Answer] The French government has taken an initiative the importance or non-importance of which remains yet to be seen, but it remains the only initiative that has been taken in a long time toward a cooperative effort in this domain. We have at least succeeded in interlocking these views and convictions into an approach, in "constraining"--if I may use the term--neighboring countries to take the approach of a "European audiovisual space."

For there to be progress in a European cooperative approach, there must be constraints. These constraints exist: The lack of a clear financial outlook on the part of the national television organizations and institutions, on the one hand; and, on the other hand, the threat of these satellites, which, in tapping our advertising, will, as they say, be "stealing our money." Regardless of how skeptical people may be, they become much more cooperative as soon as they fear for their material resources. What we created on 20 July was a sort of de facto committee to come to an agreement on what decisions are to be taken. On the satellite issue, of course, but also with respect to traditional microwave systems.

[Question] Does your mission not overlap that of the Ministry of Communications? Is there a possibility of your finding yourself in disagreement with Mr Fillioud?

[Answer] My mission has been to carry on preliminary negotiations. It is now to pursue these talks for the Ministry of External Relations. There is no overlapping with the functions of the Ministry of Communications, which is charged with the putting in place of projects. Eventually, there may be some problems between certain French projects and the outcome of these European negotiations; it will in that case be necessary that France abide by that outcome, since it was France that took the initiative. If within a European framework we settle on rules for the channeling of advertising to others, our commercial television network plan will have to conform to these rules.

[Question] Are all the countries prepared to conform to this approach? It seems that Luxembourg is; but there is Great Britain, whose plan also appears to be very aggressive.

[Answer] Great Britain's strategy is indeed very offensive and at the same time very protectionist. But Great Britain will be invited to the fall conference and will probably attend. A determination has yet to be made as to which countries intend to play the game on their own and which of them intend to cooperate. This is what will tell us whether the negotiation has been a success or a failure. If we do not reach concrete results, each country will have to pick up its marbles and play a lone game, following its own strategy. Even if it entails coming back to the negotiating table some months or years later to try to restore some kind of order, a relatively acceptable system.

9399

CSO: 5500/2329

EURONET DATA TRANSMISSION NETWORK DISAPPOINTS

Paris LE NOUVEL ECONOMISTE in French 28 Jun 82 p 46

[Article by Patrick Coquide: "Euronet's Slow Start"]

[Text] European data-processing is as difficult to achieve as European politics. Thirteen years after the initial research and 2 years after it was open to the public, Euronet Diane, the European network for the transmission of computerized data, is far from the success expected by its creators. Out of a potential number of 1 million users (for 260 million EEC residents), only 3,000 have subscribed. The services proposed by Euronet are far from negligible, however: for less than 50 francs a month, and provided one owns a computer terminal, the linkup with the network makes it possible to access 1400 data banks and 1600 data bases, both European and international (a base provides bibliographic references and succinct descriptions. A bank supplies complete texts or information.) In all, more than 60 million economic, legal and scientific reference and information items are thus available.

That impressive but underutilized tool came out of a wish on the part of the [European] community's leaders to establish a specific network among the EEC's member nations for the dissemination of computerized data, and out of a wish to prove--according to a former high official in Brussels--that they were capable of achieving a common task in a less "sensitive" area than agriculture or the common budget.

Undertaken as early as 1969, the network's setup was used, from 1975 on, by European institutions only, then, in February 1980, became available to all citizens of member nations. Other European countries, not members of EEC, are supposed to join the "Euronet Club" between now and 1985. This includes Austria, Sweden, Switzerland and Finland. In the case of Spain and Portugal, their joining the Common Market would, in fact, entail their connection to the network.

This technical and political success does, however, conceal a dual "counter-performance." Actually, only the chief national agencies and the major companies are connected with Euronet, although one of the initial purposes was to provide access to data banks for the widest possible audience, such as PME [Small and Medium-Sized Businesses], the professions and university faculties. The truly weak link, however, in the European network remains its dependency

on...the United States. More than 70 percent of the information distributed by Euronet-Diane originates in the United States. Across the Atlantic, paradoxically, there are only seven centers to serve data banks and data bases, compared to 36 in Europe. To regain ground, therefore, the Europeans need to reorganize their capabilities. At least, this is the opinion of Mr Andre Mauperon, advisor to the general directorate of data-processing for the Communities in Brussels: "National governments should no longer encourage the development of serving centers for simple reasons of strategy and prestige." In data-processing too, being European will have to take precedence over being French or German.

11936

CSO: 5500/2310

FEDERAL REPUBLIC OF GERMANY

BRIEFS

DIGITAL TELEPHONE EXCHANGE--In Hamburg and Stade the Federal German Postal Service (DBP) has put into operation its first two digital telephone exchanges. Both will handle telephone traffic in the long-distance network, the exchange in Hamburg has been expanded for 3,800 trunk lines, the one in Stade for 800. They were delivered by Siemens through a DBP bid process. SEL [Lorenz Standard Electric] built additional digital exchanges for telephone traffic in Stuttgart and Heilbronn. These facilities are presently being tested by the DBP. The digital exchanges are part of a new generation of telephone exchange facilities which will be introduced on an accelerated basis in the next few years. Speech is converted at the entrance of the exchange into digital signals, conducted in this form through the "coupling network," and at the exit converted back into the original form. This provides the prerequisite for a future universal digital network which, in addition to telephone calls, can also transmit telecommunication services such as data services or fast remote copying. [Text] [Duesseldorf VDI NACHRICHTEN in German 18 Jun 82 p 1] 12124

CSO: 5500/2325

FRANCE

BRIEFS

TELECOMMUNICATIONS DECENTRALIZATION--The DTRN [Directorate of National Network Telecommunications] has now completed its move to its definitive premises at Toulouse, under a continuation of the policy of decentralizing services headquarters to outlying provinces. In his speech inaugurating the premises, Louis Mexandeau, minister of PTT, reviewed the role of the DTRN in the telecommunications domain, adding that "it is due to take on additional functions in the field of switching by virtue of which it will operate certain interurban transit traffic centers." Referring to the existence of a "unified, unitary but not an only National Network" (this network, in fact, consists of the telephone, telex and data transmission networks), the minister underscored the DTRN's dedication to its development "with the aim of providing the country with the new services it needs, whether these be in the domains of telephony, data processing, telematics, and "videomatique" [videotex]. [Text] [Paris REVUE FRANCAISE DES TELECOMMUNICATIONS in French Jul 82 p 8] 9238

REGIONAL FIBER OPTICS CABLES--The first contract for the furnishing of fiber optics cables to meet the needs of the regional telecommunications services has been awarded to LTT [Telephone and Telegraph Services. This will enable the installation, during the first half of 1983, of 13 regional trunking arteries totaling 60 km of cables and 1932 km of fibers. Two regions (Paris and Montpellier) will lay and interconnect their own cables. These cables will eventually be equipped with systems for the transmission of data at a speed of 34 Mbits/sec over optical fibers. Two other sectionalized contracts will be awarded this year by PTT under its 1982 program: 51 arteries representing 285 km of cables and 5,200 km of fibers. [Text] [Paris REVUE FRANCAISE DES TELECOMMUNICATIONS in French Jul 82 p 9] 9238

UNDERWATER FIBER OPTICS COMMUNICATIONS--The first phase of the national underwater fiber optics communications program will be signalized in September by the laying of a 20-km, repeaterless link between Juan-les-Pins and Cagnes-sur-Mer. The second phase will be an experimental link between Antibes and Grimaud (78 km). The equipment is being manufactured by CIT [International Telephone Company] and Cables de Lyon. The cable will consist of four monomode fibers with a regenerative-repeater spacing of 25 km; it will link two 280-Mbit/sec

systems, thus making available, in 1983, close to 8,000 telephone channels. This program is to be completed in 1985 with the opening of a commercial link between the continent and Corsica. [Text] [Paris REVUE FRANCAISE DES TELECOMMUNICATIONS in French Jul 82 p 9] 9238

BIARRITZ FIBER OPTICS NETWORK--In June, the first fiber optics cables were laid at Biarritz: Two 70-fiber, 1,000-meter cables without splices, between the Lycee Exchange and distributing terminals located in the center of the city (SAT [Telecommunications Corporation] and SILEC [Industrial Company for Electrical Links] one 70-fiber, 2,280-meter cable without splices over the route secured by the link (LTT) between the railroad station exchange and the Rue Kennedy exchange. During the same month, a model of the future videophone, just as it will be installed on the premises of 1,500 subscribers around mid-1983, was exhibited. The services this videophone system will be able to offer were also spelled out. Access to data banks and image banks, reception of national and international television programs, and possibly local ones. [Text] [Paris REVUE FRANCAISE DES TELECOMMUNICATIONS in French Jul 82 pp 9-10] 9238

THOMSON CSF IN INDIA--Pursuant to an international request for bids launched in March 1981, Thomson-CSF Telephone has been awarded a contract by the Indian PTT for the furnishing of 18 Type P40 private-line telephone exchanges, representing 14,000 telephone lines. [Text] [Paris REVUE FRANCAISE DES TELECOMMUNICATIONS in French Jul 82 p 11] 9238

SAT CONTRACT WITH THAILAND--The SAT [Telecommunications Corporation] has just been awarded a contract by the EGAT [Electric Power Production Administration of Thailand] to furnish and install a Telcom 320 automatic switcher. This contract valued at 3.4 million French francs, was won in an international competitive bidding contest against Western Electric and NEC [Nippon Electric Company], although financing is to be provided by the Bank of Japan. The switcher is scheduled to go into service at the end of this year. This automatic switcher, the capacity of which is 3,000 lines, will be the hubbing point of the EGAT network, which extends throughout Thailand. The new Telcom 320 equipment, a PABX version of the TC 300 public exchange, was exhibited for the first time at an international show. [Text] [Paris REVUE FRANCAISE DES TELECOMMUNICATIONS in French May 82 p 12] 9238

THOMSON-CSF-TUNISIA UNDERWATER COMMUNICATIONS--Tunisia has just ordered from CIT-ALCATEL [International Telephone Company-Alsatian Company for Atomic, Telecommunications and Electronic Construction] and from Cables de Lyon, two companies belonging to the CGE [General Electric Company] group, the furnishing of an underwater telephone link between Bizerte and Martigues. The contract sum is 200 million French francs. Planned capacity: 2,850 circuits. Start of service is scheduled for the end of 1983. Two underwater telephone cables already link Tunisia and France, as is known, with a total capacity of 768 circuits. The Ministry of Transport and Communications of the Republic of Tunisia has just awarded the French group headed by CIT-ALCATEL and comprising Cables de Lyon

and the SAT [Telecommunications Corporation] and TRT [Radio and Telephone Telecommunications Company] companies contracts for the completion of several sections of the new long-distance digital network that is to link the principal Tunisian cities located in the regions of Tunis, Sousse and Sfax. The overall total of the order placed with the French consortium comes to 75 million French francs. Upon completion of this order, Tunisia, which is already equipped with CIT-ALCATEL Type E 10 time-division telephone exchanges, will then have an integrated digital network, enabling the introduction of new telematics services. [Text] [Paris REVUE FRANCAISE DES TELECOMMUNICATIONS in French Jul 82 p 12] 9238

SATELLITE IMAGE PRINTER--At the Unispace 82 show being held in Vienna from 9 to 21 August, Agfa-Gevaert Belgique and the ESA [European Space Agency] are exhibiting jointly an experimental satellite electronic image printer, operating between Noorwijk (Netherlands) and the Austrian capital. The order to print is given via an image analyzer and transmitted to a telecommunications earth station. The signal, relayed by the OTS [Orbital Test Satellite] is received by the Viennese station, where an Officer P400 electronic printer reproduces the document that was analyzed at its origin by the Agfa-Gevaert IS 200. The latter reads an A4 document in 4 seconds with a separative power of 8 points per horizontal millimeter, and 7.7 points vertically. The grays are produced by electronic cross-hatching. The P400 uses a laser as an electro-optical writing element and operates at the same speed of 4 seconds for the printing of an A4 page (separative power of 16 points per horizontal millimeter and 15.4 points vertically). The P400 is also equipped with a multiple-character generator, enabling it to convert the instructions given by a computer or by a word processing equipment into a linear cross-hatched signal of high separative power. [Text] [Paris ZERO UN INFORMATIQUE HEBDO in French 23 Aug 82 p 11] 9238

MINICOMPUTER DELAYS--The development of French programs adopted to micro-computers, one of the main cultural issues at stake in the eighties, has become, for the publishers involved, a "mirage," which they say portends a pure and simple "failure" that leaves the door wide open to American products. Three textbook publishers, Hachette, Nathan and Hatier, have just started an organization to promote awareness of the dangers of such a failure, which threatens data processing programs designed for teaching--this is 3 years after Operation "10,000 Microcomputers" was implemented in the high schools. They say that the situation today shows less progress than 2 years ago. In fact, according to the publishers, beside such major experimental works as Teletel in Velizy or the World Data-Processing Center in Paris, they feel that the real French market, partially paralyzed by state regulations, has become "more fragile and more permeable." However, one of the objectives sought in this area was "recapturing the French market and developing software adapted to our needs." On a technical level, the publishers are coming up against the disparity of materials and languages developed in France through public financing. They feel this absence of standardization will thus gradually result in choosing the only "common denominator" in existence: American standards...[Text] [Paris LES ECHOS in French 16 Jul 82 p 7] 11936

OPTICAL CABLE NETWORK BETWEEN MESTRE, PADOVA DESCRIBED

Rome NOTE RECENSIONI NOTIZIE in Italian Apr-Jun 82 pp 57-63

[Article by G. Bonaventura of the ASST (State Telephone Services) and O. Cottatelucci and P. Rosa of the Higher Institute of PT (Posts and Telecommunications): "Mestre-Padova Interurban Optical Cable--Part 1: Characterization in the Factory"]

[Text] Summary--The article describes first of all the general characteristics of the Mestre-Padova optical-cable installation, such as the layout, the structure of the cable, the type of fibers, etc. Next, the measurement methods used for characterization of the optical fibers during the acceptance tests in the factory are illustrated briefly. Finally, the results for the geometric, optical and transmissive characteristics of the fibers as observed in test pieces of cable are reported in the form of tables and diagrams.

1. Introduction

The technical characteristics of optical fibers and optical cables leave no doubts about suitable and extensive application of them in telecommunications networks (Bibliography 1). Furthermore, an economic advantage of multimodal optical fibers over the traditional coaxial pairs, 2.6/9.5 mm, for long-distance interurban connections is already obvious. The interest of managers of telecommunications networks in this new technique, both in Italy (Bibliography 2) and abroad, is therefore natural.

In 1980-1981, the ASST, together with the SIP [Italian Telephone Company], installed an optical-fiber cable connection among several urban and interurban exchanges of the Rome network. The cable, 16.38 km long, contains 18 multimodal optical fibers with index-of-refraction gradient profile, 14 of which have transmission characteristics (attenuation ≤ 4 dB/km and band width > 700 MHz-km) which, at the time of ordering, represented the best that was available in industrial production. The research on the techniques of laying long pieces of cable in conduit, on splicing, on measurement of the characteristics of the fibers and, in general, on whatever is necessary for putting in an installation in an urban area has been carried on within the framework of this first installation.

On the basis of the favorable results achieved, the ASST then decided to go ahead with the laying of a first interurban cable between Mestre and Padova.

The purpose of the present article is to describe the characteristics of this cable and the results of the tests conducted in the factory. The aspects relating to the laying, the splicing and the characterization of the regeneration sections will be presented in a subsequent article.

2. Objectives and Plan of the Installation

The Mestre-Padova line was selected for the laying of the cable for several reasons. It constitutes a section of the Mestre-Verona-Milan-Turin line which, as regards national and international traffic requirements, is second only to the Milan-Rome line. In addition, the laying of a coaxial-pairs cable between Mestre and Padova had already been planned, and the same excavation could therefore be used, with considerable saving on installation costs. Finally, the length of the connection (32 km) proves appropriate for examination of the problems typical of interurban installations.

The layout of the cable and the various exchanges connected are indicated in Figure 1. The cable will be laid in conduit for about 3 km (in the urban areas of Padova and Mestre) and in a trench along the highway for the remainder of the distance. It is planned to use the cable essentially with 140-Mbit/s sys-

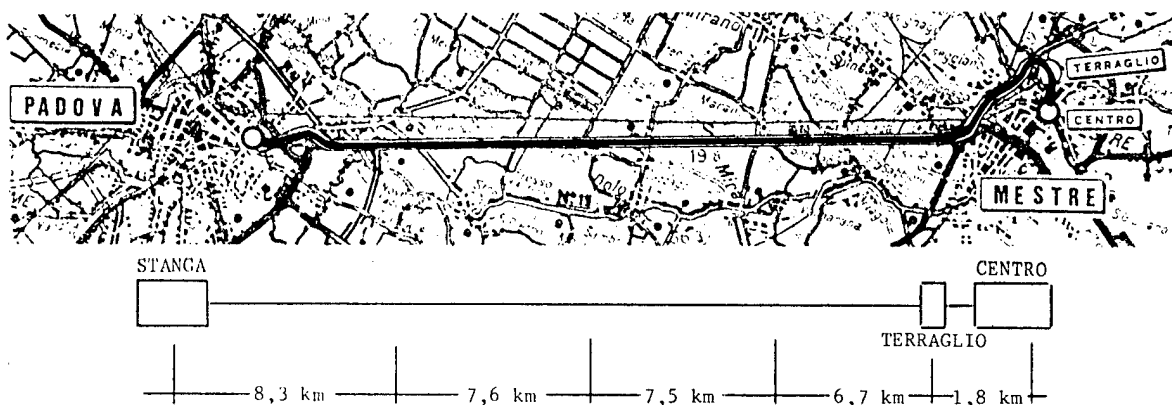


Figure 1--Layout of cable

tems, some working at 850 nm and others at 1,300 nm; containers for the regeneration points have therefore been planned with a spacing of about 8 km. However, in order to take into account any eventual unfavorable laws of bandwidth addition and of future systems with different regeneration pitch (if the WDM [expansion unknown] technique were to be adopted, for example), the installation has been prearranged in such a way as to be able to place the optical regenerators also in containers for the 60-MHz systems of the coaxial-pairs cable, which are positioned every 1.55 km.

Among the principal purposes fixed for the Mestre-Padova cable, we can mention those of providing an initial solution to the typical problems of interurban installations, such as protection for trench-laying, remote power-supply and remote monitoring of the intermediate regenerators, as well as initiating experience with fibers and systems operating around 1,300 nm.

3. Cable and Optical Fibers

The optical fibers used are of the multimode type with gradual-progression refraction index and were supplied by Corning Glass Works. The nominal dimensions of the fibers--core 50 μm and shell 125 μm --are as recommended by the ITTCC [International Telephone and Telegraph Consultative Committee] (Recommendation G.651, Vol III-2).

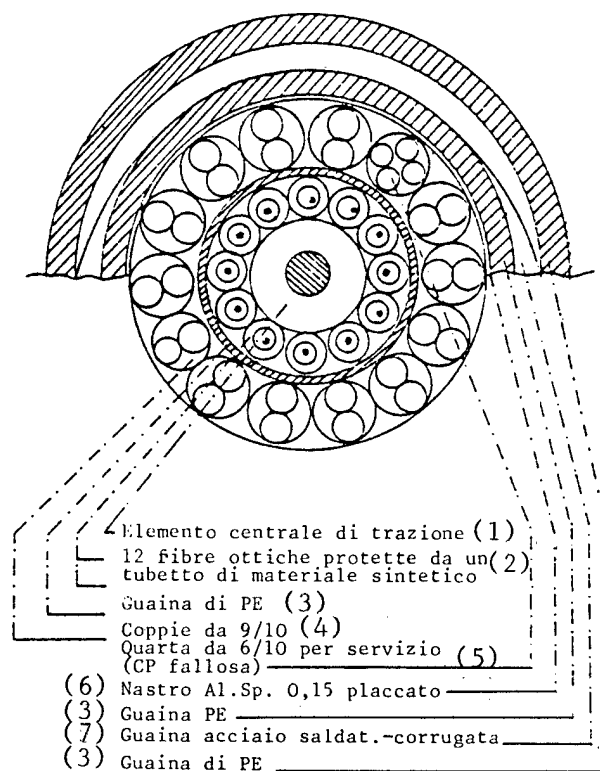


Figure 2--Structure of Cable

Key:

- | | |
|--|---|
| 1. Central element for pulling | 4. 9/10 pairs |
| 2. 12 optical fibers protected by a small tube of synthetic material | 5. 6/10 quadruple for service (CP [expansion unknown] perforated) |
| 3. Polyethylene covering | 6. Plated 0.15 Al.Sp. [expansion unknown] tape |
| | 7. Welded-corrugated steel covering |

The cable contains 12 fibers of 2 different types: 8 fibers (type A) are qualified only at 850 nm, while the other four (type B) are qualified at both 850 and 1,300 nm. The transmission characteristics of the cabled fibers, as fixed at the time of ordering, are:

| | <u>Attenuation</u> (dB/km) | <u>Band</u> (MHz-km) |
|--------------------|-------------------------------|-------------------------|
| Type A (at 850 nm) | 4.0 | 1,250 |
| Type B (at 850 nm) | 3.5 | 750 |
| (at 1,300 nm) | 2.2 | 750 |

The cable has a concentric structure (Figure 2). In the inside ring are the 12 fibers, each of them protected by a loose-fitting covering with outside diameter of 2 mm. The outside ring contains 13 9/10 pairs for remote power supply and remote monitoring of the system, as well as one 6/10 quadruple with perforated insulation for localization of cable breakdowns. The central element for pulling consists of a steel wire with diameter of 2.2 mm. covered with polyethylene. For trench-laying, the external protection is composed essentially of a steel sheath, welded and corrugated, protected by an external covering of polyethylene. The cable's nominal outside diameter is 37.5 mm and its weight is about 1,370 kg/km, while the nominal manufactured length is about 1,000 m.

4. Methods of Measurement

4.1 Measurement of Dimensional Characteristics

Measurement of the dimensional characteristics (Bibliography 4) of the fibers involves evaluation of the radii of the core and of the shell, concentricity error and noncircularity.

The measurement method adopted consists in examining an image of the fiber enlarged 500 times with a transmitted-light microscope. A transparent mask, composed of six graduated half-lines having the same origin and with constant angular distance, is positioned on the photograph of the enlarged fiber with the origin of the half-lines in the central zone of the fiber's section. Direct reading of six values for the radii of the core and of the shell makes it possible, with appropriate elaborations, to project to the geometric characteristics of the fiber.

This measurement method was chosen for the acceptance measurements, because of its simplicity and because of the fact that it offers good repeatability of measurement despite the fact that it can be influenced by factors such as time of exposure of the photographic film or subjective evaluation of the grey in the zone of transition between core and shell.

4.2 Observation of Progression of Refraction Index and of Numerical Aperture

The index of refraction inside the core of the fiber has an almost parabolic progression on which the value of the modal dispersion of the fiber strictly depends.

Observation of it was done by illuminating the face of a fiber 1 meter long uniformly with an incoherent source and noting the variations of intensity on the fiber's output section.

The emission conditions are such as to illuminate the entire core with emission-optics numerical aperture greater than the presumptive numerical aperture of the fiber; the width of the spectrum of light emitted is within about 10 nanometers of the wavelength at which the progression of the refraction index is noted. In the proximity of the output section of the fiber, the optical power not propagating in the core is eliminated by immersing the fiber's shell in a high-refraction-index liquid for several centimeters. The real image of the output face of the fiber, formed by a suitable optical system, is analyzed along a diameter with a photodiode, in such a way that each point measured corresponds, on the output face of the fiber, to a distance of 1 or 2 microns.

The progression of the optical-power intensity thus noted is proportional to the index of refraction, and the progression of the latter can therefore be traced by means of a plotter.

With suitable adaptation of the characteristics of the optical system in reception, one can also project to the value of the numerical aperture.

4.3 Measurement of Attenuation

Measurement of the attenuation of the fibers was done by the cut-back method (Bibliography 5), which is the one selected as the reference method by the ITTCC. Per this method, the optical power in two sections of the fiber is compared (in practice, the end section and a section about 1 meter from the initial one, after cutting of the fiber). In order for the power measured in the short section of the fiber to have propagation conditions close to the stationary ones, it is necessary to control the characteristics of emission in the fiber. For this purpose, the fiber is illuminated uniformly on a circle concentric with the core, having a diameter of 35 microns and with numerical aperture of about 0.14 for the emission optics. The wavelengths at which the measurements are made are obtained by filtering a modulated white light with interferential filters at 850 and 1,300 nm, having a passband corresponding to some 10 nanometers. The observation is made with silicon or germanium diodes (the latter being suitably cooled when used for measurement at 1,300 nm); the signal thus detected is measured by means of an amplifier coupled to the frequency of modulation of the white band.

4.4 Measurement of Bandwidth

Measurement of bandwidth was done in the time domain by calculating the fiber's transfer function as a ratio between the Fourier transform of the pulse at the output of the fiber itself and that of the same pulse after a brief section of fiber taken as a reference (Bibliography 5).

In order for measurement to yield consistent results, several conditions were adhered to. In particular, the lasers used at the wavelengths of 850 and 1,300 nm have a spectral width of ~ 2 nm at 850 and ~ 3 nm at 1,300 nm in order to re-

duce the influence of dispersion of the material; the duration of the pulses is less than 400 picoseconds, with repetition frequency on the order of 30 kHz; emission is done in such a way as to illuminate the entire core of the fiber with a numerical aperture greater than that of the fiber itself; and in order to excite all the modes inside the fiber, use is made of a mode mixer, composed of short pieces of fiber of different kinds joined to one another.

The reference pulse is the output pulse from the fiber under measurement, they are sampled [as published] with a frequency at least quadruple that of the frequency band to be measured. The values thus sampled are worked out by doing the Fourier transforms; these are then calculated for discrete frequency values at intervals of about 1/10 of the band of the fiber. With the ratio of the Fourier transforms of the two pulses established, and with the transfer function thus obtained, the band of the fiber corresponding to the value of the frequency for which the modulus of the transfer function is reduced to half of that relative to the lowest frequency [as published].

5. Results of Measurements in Factory

5.1 Dimensional Measurements

Characterization of the fibers from the geometric point of view takes on great importance inasmuch as the tolerance on the dimensions of the core and of the shell and the errors of concentricity and noncircularity of the core and of the shell have a direct influence on the attenuation of the splices.

The results of the measurements made of the diameters of the core and of the shell are presented in the Figure 3 graphs, from which it is noted that the values exceed the limits of $\pm 3 \mu\text{m}$ recommended by the ITTCC, Recommendation G.651. It is reasonable to suppose that since this is the first production of fibers with the 50/125 μm standardized dimensions, the technological procedures and the perfecting of the fiber production process have not yet been completely optimized by Corning Glass Works.

An opposite situation occurs for the errors of concentricity and noncircularity of the core and of the shell, as presented in Table 1, which are decidedly lower than what is called for in the same Recommendation and by the ITTCC [as published].

With the above taken into account, it can be postulated that in the most unfavorable cases, and therefore for an extremely low percentage of the splices, in which all the conditions that are most adverse for the geometric parameters are present, the attenuation of the splices themselves could take on a maximum value of 0.8 dB, while the mean value would have to be about 0.4 dB (Bibliography 4).

5.2 Transmission Characteristics of the Fibers Before and After Cabling

The attenuation and bandwidth of the fibers before and after cabling were measured and compared on the first 10 factory lengths supplied.

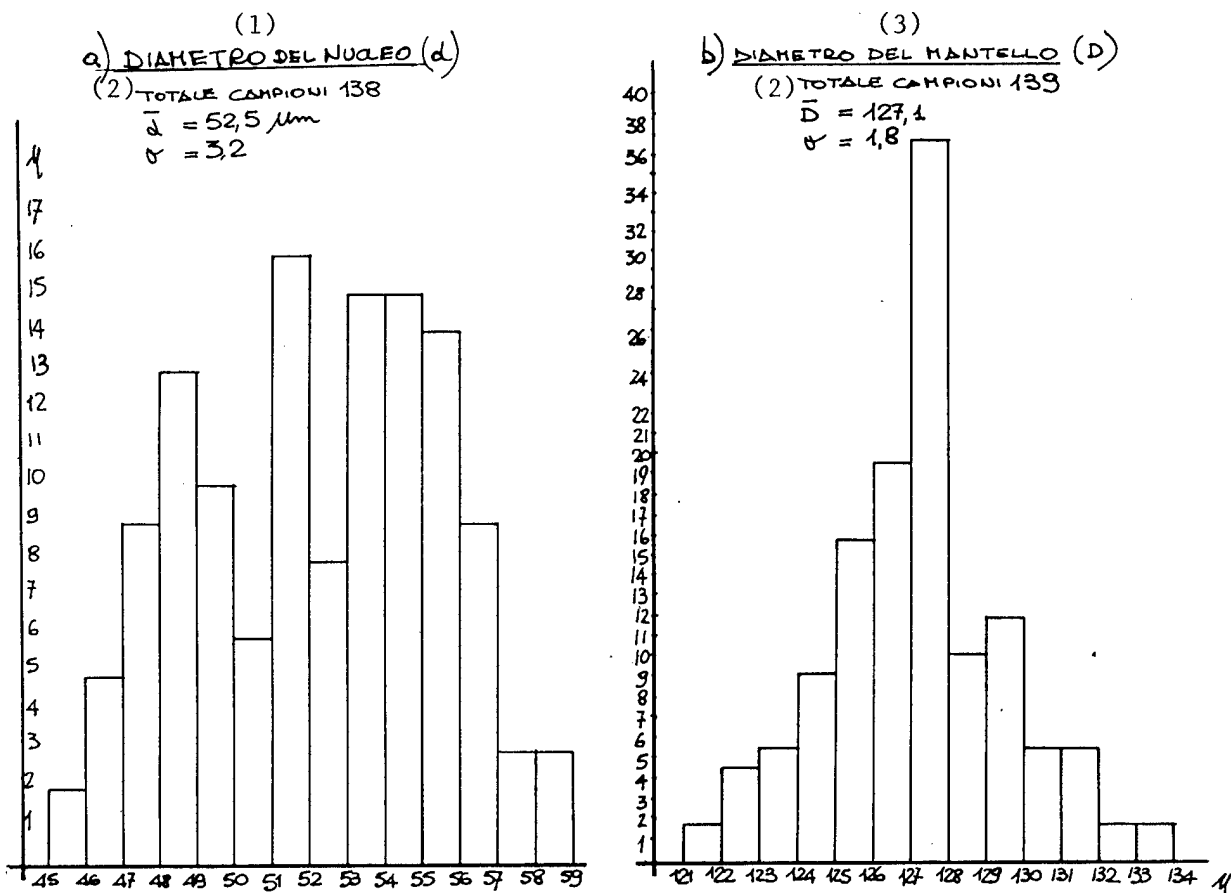


Figure 3--Diameters of the Fibers

Key:

1. Diameter of core 2. Total samples 3. Diameter of shell

The results of these measurements show that there is no deterioration of the transmissive characteristics as a result of the fiber-cabling operations, as has already been verified, for that matter, with the FOSTER/COS 3 cable of Rome. With the Padova-Mestre cable, though, it has been brought out that this conclusion is valid also for low attenuations and high bandwidths. By way of demonstration, the diagrams of Figure 4 are presented, in which the ordinates represent the percentage of the samples that do not exceed the value on the abscissa.

The distributions presented do not correspond to a Gaussian distribution, inasmuch as the maximum attenuation values and minimum bandwidth values required do not limit the statistics to a single portion of the more general statistics for the entire production of fibers.

5.3 Measurements on Finished Cable

5.3.1 Attenuation

The graphs of the attenuation values encountered in 1-km lengths of cable are presented in Figure 5, while the values characteristic of the distributions are

Table 1--Geometric Characteristics of the Fibers

| | (1) | (2) | (3) | (4) | | (5) | |
|--------------------|----------------------------------|------------------------------------|--------------------------------|-------------------------------------|----|---------------------------------------|----|
| | DIAMETRO NUCLEO (μ m) | DIAMETRO MANTELLO (μ m) | ERRORE CONCENTRICITÀ (%) | NON CIRCOLARITÀ NUCLEO (%) | | NON CIRCOLARITÀ MANTELLO (%) | |
| | A+B | A+B | A+B | A | B | A | B |
| (6) VALORE MEDIO | 52,5 | 127,1 | 0,55 | 12 | 18 | 05 | 07 |
| (7) SCARTO Q.M. | 3,2 | 18 | 0,4 | 09 | 11 | 04 | 03 |
| (8) LIMITI CITT | 50 \pm 3 | 125 \pm 3 | \leq 6% | \leq 6% | | \leq 2% | |

Key:

- | | |
|------------------------------|--------------------------|
| 1. Core diameter (μ m) | 5. Shell noncircularity |
| 2. Shell diameter (μ m) | 6. Mean value |
| 3. Concentricity error | 7. Mean quadratic spread |
| 4. Core noncircularity | 8. ITTCC limits |

presented in Table 2. It will be noted that in the first window, the attenuation values for the type-A and type-B fibers are very close to one another, and that on the whole, considering the graphs of Figure 5, the attenuations are far lower than those specified in the order and indicated in section 3.

Table 2--Transmission Characteristics of the Fibers

| | (1) | (2) | (3) |
|----------------------------|-----------------|-----------------|---------------------------|
| | NUMERO CAMP. | VALORE MEDIO | SCARTO QUADR. MEDIO |
| a) <u>ATTENUAZIONE</u> (4) | | | |
| (5) TIPO "A" (850 nm) | 272 | 2,40 | 0,21 |
| TIPO "B" (850 nm) | 136 | 2,26 | 0,11 |
| TIPO "B" (1300 nm) | 136 | 1,00 | 0,17 |
| b) <u>BANDA</u> (6) | | | |
| (5) TIPO "A" (850 nm) | 272 | 1360 | 109 |
| TIPO "B" (850 nm) | 136 | 905 | 170 |
| TIPO "B" (1300 nm) | 136 | 1210 | 250 |

Key:

- | | |
|--------------------------|----------------|
| 1. Sample number | 4. Attenuation |
| 2. Mean value | 5. Type |
| 3. Mean quadratic spread | 6. Band |

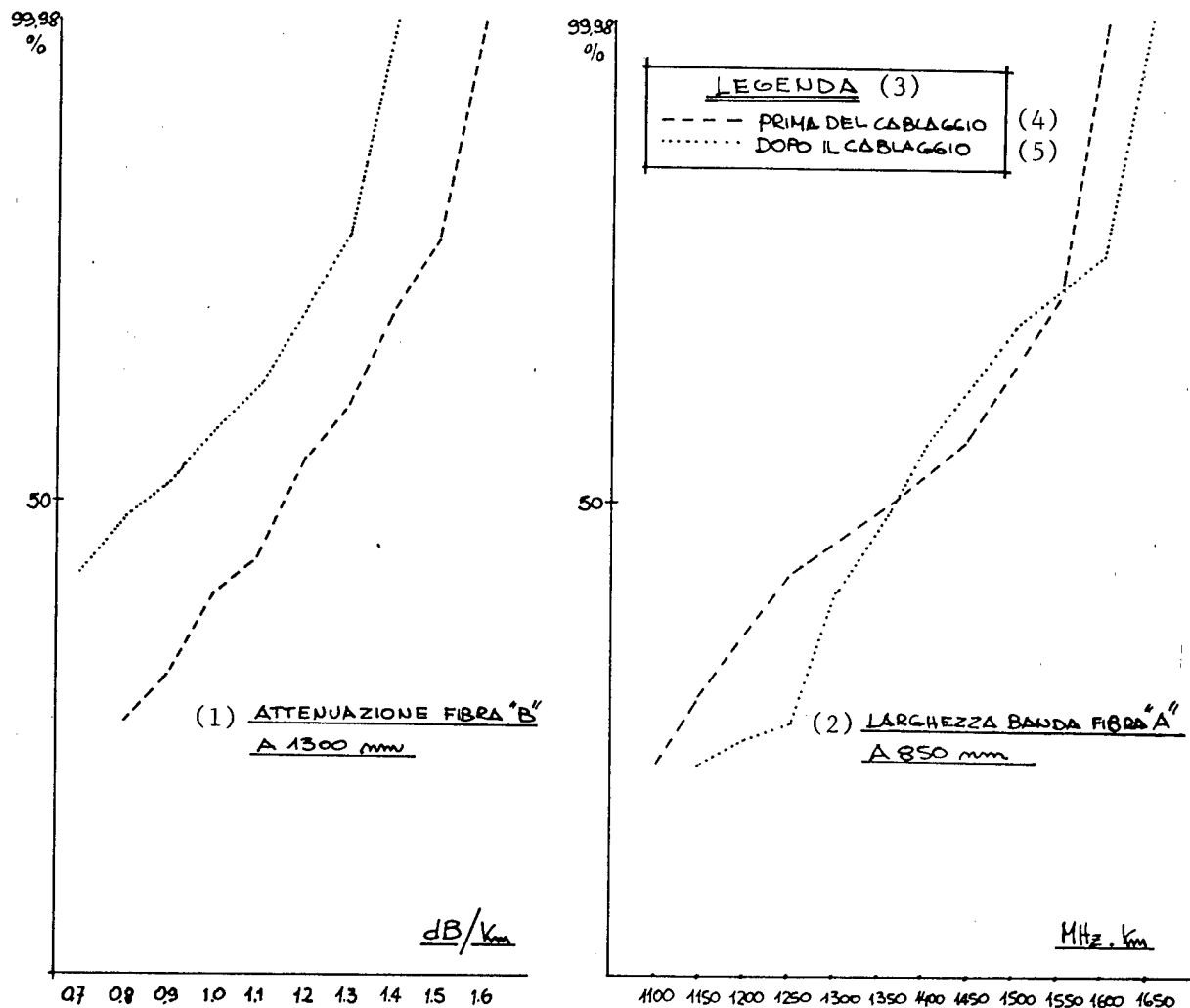


Figure 4--Variation of Transmission Characteristics

Key:

- | | |
|---|-------------------|
| 1. Attenuation of fiber "B" at 1,300 nm | 3. Legend |
| 2. Bandwidth of fiber "A" at 850 nm | 4. Before cabling |
| | 5. After cabling |

The attenuation values measured on the lengths are also all lower than those required as mean values on the regeneration sections (≤ 3.5 dB/km for the type-A fibers, ≤ 3 dB/km at 850 nm and ≤ 1.7 dB/km at 1,300 nm for the type-B fibers).

Besides measurement at fixed wavelength, attenuation measurements were made for the two types of fiber in function of wavelength from 850 nm to 1,400 nm. The typical function $\alpha = \alpha(\lambda)$ is presented in Figure 6, in which one notes, for both fibers, the absence of the peak at 900 nm related to the presence of hydroxyl OH^- and a spectral progression of attenuation that is similar for both types of fiber.

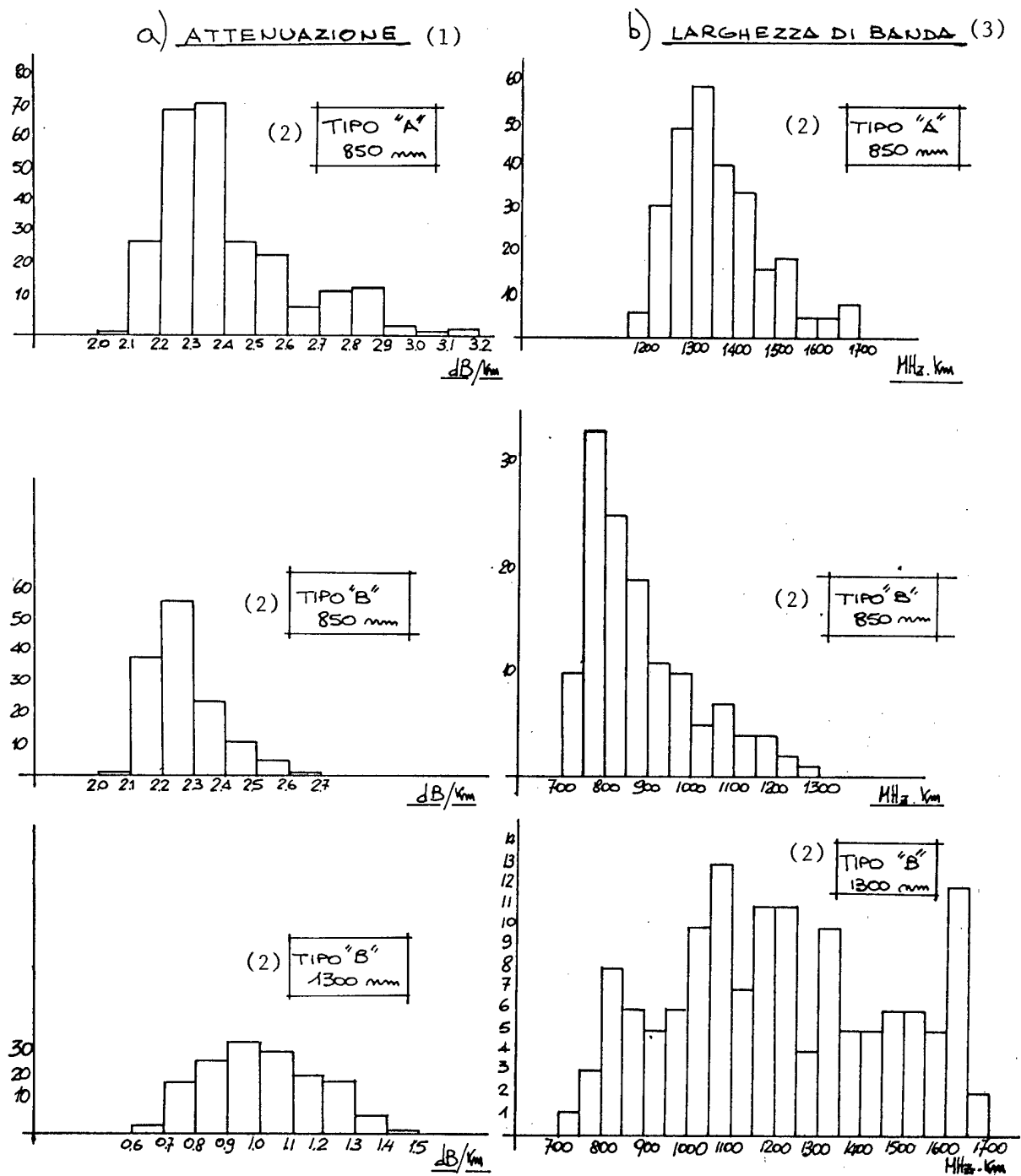


Figure 5--Attenuation and bandwidth of fibers

Key:

1. Attenuation 2. Type 3. Bandwidth

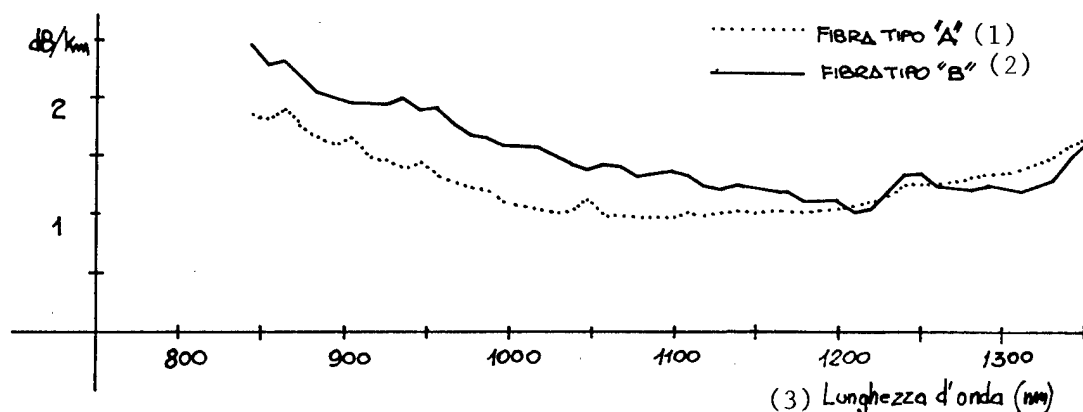


Figure 6--Progression of attenuation, for the two types of fiber, in function of wavelength

Key:

1. Fiber type "A" 2. Fiber type "B" 3. Wavelength (nm)

The progression of the attenuation of the type-A fibers does not rule out a possible use of these fibers too in a second window, on condition of ascertaining the bandwidth available--which was not measured in the factory at 1,300 nm --within the framework of the application.

5.3.2 Bandwidth

The characteristic values of the distributions of the results obtained are presented in Table 2, while Figure 5 presents the graphs of the distribution of the measurements themselves. It is seen in these graphs that several values are lower than those required (by 100 MHz for the type-A fibers and 50 MHz for those of type B). Such cases should not, however, prejudice the overall quality on the regeneration sections, inasmuch as the average of the values measured is well above that of the values required.

5.3.3 Measurements of Numerical Aperture and Index of Refraction

Measurement of numerical aperture was made on a limited number of fiber samples.

The typical values required are: 0.21 for the type-A fibers and 0.20 for the type-B fibers, and the results of the measurements made are in line with what was required.

The purpose of measurement of the index profile--this too being limited to just a few samples--was to verify the regularity of the progression of the refraction index. The progressions noted proved regular and similar to one another.

In some cases, a slight central "deep" was detected.

5.4 Mechanical Tests

The mechanical tests of bending, percussion and crushing were carried out only on the optical core of the cable, comprised totally within the most internal polyethylene covering.

In the percussion tests, the lowest energy at which a fiber was interrupted was 6 Kgm, while in the crushing test, the lowest value at which rupture of a fiber was encountered was 1,750 kg.

6. Conclusions

After installation of the Rome optical cable, which constitutes a typical urban installation, the ASST programmed and is in the process of carrying out the first optical-fiber interurban installation in Italy, to connect Mestre and Padova.

The 32 km of optical cable have already been produced and put through acceptance tests in the factory. The results of these tests, presented in this article, have shown that the characteristics of the fibers and the cable correspond to the specifications of the technical norms. In particular, it was confirmed that the fiber-cabling operations do not produce significant variations of the transmission characteristics of the fibers themselves, even in the case of very low attenuations (about 1 dB/km) and very high bandwidths (about 1,250 MHz/km).

The cable has already been completely laid, and the entire installation should be finished by the end of 1982. The results obtained from characterization of the cable in use will be presented in a subsequent article.

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PRIVATE FIRM TO TAKE OVER TROMSO EARTH STATION FROM GOVERNMENT

Oslo AFTENPOSTEN in Norwegian 30 Aug 82 p 25

[Text] Beginning on 1 September Drive Electronics A/S will take over the operation and maintenance of the Tromso satellite telemetry station, which is owned by the Norwegian Scientific and Technical Research Council (NTNF). The first phase of the arrangement will last through 1985. Most NTNF employees at the telemetry station have joined the company, which will be managed by the former station manager. The 1983 contract is valued at about 1.5 million kroner.

Behind Drive Electronics is the Asker company A/S Informasjonskontroll with 40 percent of the shares. Rolf Berg Drive A/S owns 31 percent, while the employees in the firm own 29 percent of the shares. Drive Electronics was established this past spring. The idea behind the company is to enter into management contracts, similar to the one recently signed with NTNF, for the traditional development of prototype electronics and equipment for application in various electronics systems. The firm also offers consulting services to companies with no expertise in electronics, director Arvid Overgard told AFTENPOSTEN. He also said that the marketing of satellite services gradually would become one of the firm's main activities. One of the primary services would be to supply data gathered by so-called telemetric satellites. This data can be used for charting natural resources and monitoring pollution levels, for land management planning, and for measuring snow fall in the mountains in order to estimate future water reserves in reservoirs at power plants, to name only a few uses.

"We believe there is a large market for such satellite services and, for this reason, we are considering establishing a commercial processing center to process data from telemetric satellites, according to the needs of our customers," Overgard said.

The satellite telemetry station in Tromso, which has been under construction the past 15 years, soon will begin operations. This will begin next year when the station will hold a key role in testing a satellite system for receiving signals from ships in distress and for getting help to them. The station will be capable of receiving distress signals via the satellite system, which will

include a Russian and an American satellite specially equipped for this task.

"This type of transition from the construction phase to the operational phase often means cutbacks in personnel," Overgard said.

"We will retain the number of employees at the station today, however, most of whom already are employed by us, and hire some additional personnel. NTNF no longer will need to have its own people at the station and can concentrate on purchasing any services the research council may need. I believe that this is an arrangement that will benefit both parties.

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CSO: 5500/2340

SWEDEN

HEAD OF L. M. ERICSSON VIEWS COMPANY'S SUCCESS, FUTURE TRENDS

Stockholm SVENSKA DAGBLADET in Swedish 22 Aug 82 p 32

[Article by Johan Myrsten: "L. M. Ericsson's Future--Fewer Workers But Greater Profits"]

[Text] "What we Swedes can learn from the Japanese today is above all quality. They are incredibly skillful in producing things which really work, and which are produced so that they come out continuously without mistakes. That they are also skillful in technique is the result of planning, and that we can also be just as good at. And as for sales, I dare to claim that L. M. Ericsson is better than the Japanese."

This was said by Bjorn Svedberg, who has been the managing director of the telephone company L. M. Ericsson for 5 eventful years of increasing business, spectacular foreign orders, large new investments and thorough technical conversions.

Bjorn Svedberg paints L. M. Ericsson's future in very bright colors--despite the fact that the technical changes from electro-mechanical to electronic are going to make additional LM workers surplus throughout the year 1985. The 107-year-old telephone company's wide-reaching activities are confronting ideal future markets, which in certain cases have expectations for "majestic" growth.

'We Make No Mistakes'

On the other hand he shows a certain concern for the concept of "Swedish Quality," even if in careful terms.

"One can see a slight risk that the concept of Swedish quality is getting frayed around the edges. I do not believe that our society is permeated with the idea of quality to the same extent as Japan.

In Japanese industry they do not talk so much about statistics which show what percent of mistakes they have in production. They announce that they

make no mistakes. It is a sort of religion: 'We make no mistakes.' Everyone works to avoid mistakes."

This makes production considerably cheaper, says Bjorn Svedberg.

"The best thing that rationalization can do for an industry is to eliminate mistakes in production."

Bjorn Svedberg has himself grown up with production skill. After his education at the Technical University 20 years ago, he came to L. M. Ericsson. In the 1970's his career gained speed and Svedberg was given a key role in the development of the electronic telephone exchange system AXE--the big seller which has so far brought in export orders for over 10 billion kronor from 40 countries, not counting all the subsequent orders for other Ericsson products and services.

Fast Career

In 1976 Bjorn Svedberg was named technical director, and only one year later he was picked at age 40 to be the successor to Bjorn Lundvål as managing director of the company's almost 70,000 employees.

He says he has never exactly known why he was chosen. He modestly says first, "It was so difficult to find anyone, so they picked someone who had the same Christian name as the previous managing director."

More officially, the answer is, "I believe that the board picked someone who understood the technology we work with, and who furthermore showed an interest in marketing. Marketing is of course fundamental. I do not believe one should be a pure technician in a technical company."

During his 5 years as managing director Bjorn Svedberg has built up a leadership group around himself, mainly consisting of men of approximately the same age and with long backgrounds with L. M. Ericsson.

"We work together in an informal and dynamic way."

At the same time the new leadership continues largely along the lines drawn up under Bjorn Lundvall's time and before, said Bjorn Svedberg. The very international direction of the company is inherited, according to Svedberg.

Change of Character

Under the new leadership LM has more quickly begun to change character. Of course the telephone stations continue to comprise almost half of the sales, and AXE exchanges are going to give good income throughout this century. But a number of new areas are becoming more important, primarily investment in information technique and "office automation"--meaning combining data

technique, telecommunications and modern office electronics. It is a very fast changing world market which has enticed a number of big international companies in different branches into what can be one of the biggest market conflicts of the 1980's. At stake are hundreds of billions.

For L. M. Ericsson's part the investment is manifested by the purchase of half state-owned Datasaab, now the main part of the L. M. Ericsson subsidiary Ericsson Informations Systems (EIS).

"Office automation is something which is expanding today, but which during the second half of the 1980's is going to expand much more," said Bjorn Svedberg.

'Better Than Expected'

"We thought we understood this at the end of the 1970's. The governing idea for the purchase of Datasaab was that they were in a future area which we could not develop. We could have purchased another company, but we could not really avoid office automation. It is becoming such an integrated part of the development of communications, and is such an interesting market. We had Datasaab in mind previously, and when the company was for sale it fit very well. It was especially timely."

The money-losing and partly problem-filled Datasaab's inclusion in the LM company has gone "better than expected," said Bjorn Svedberg. Within a couple of years, according to Svedberg, EIS will be an "exceptionally profitable concern, which will then be able to carry its own costs."

"That was one of the more successful acquisitions that I have participated in."

The question of whether the large investment in EIS and office automation is a mammoth risk with the AXE profits gets the following answer from Bjorn Svedberg:

Risky Not to Invest

"One just does not take mammoth risks. One must be reasonably sure that what one does will go right. Life is not so constructed that risks can be taken with companies which earn a couple of billion kronor. It is not fair to the employees or the stockholders.

"As soon as one invests there is talk of risk. It can be still riskier not to invest."

According to both the LM leadership and experts in the industry the purchase by LM of Datasaab happened at a very good time--even though it is too early

to be sure. In the same way many observers say that AXE exchanges were launched at a very appropriate time, after most competing companies, but with better technology.

Just As Great Advantage

Three years ago the LM leadership decided that the AXE exchanges had a technical advantage of 2 years over their competition. Judging today, the LM leadership believes that the advantage is just as great, and that it can be held for a couple of years more.

This can be needed. Although the demand is constantly rising, the market for telephone stations and exchanges is now experiencing "a certain over-development." The main competition is seen in offers upon offers.

"The group which is always competing consists of ITT, Siemens, Philips, two French and four Japanese companies, and Canadian Northern Telecom."

The powerful American telephone company AT&T has recently joined this group. AT&T administers most of the American telephone net and has greater access than any other company in the world. As to the traditional telephone stations and exchanges, however, AT&T is no greater threat to L. M. Ericsson, according to Bjorn Svedberg.

AT&T does not frighten us more than other individual firms. They do not have as great international experience."

Rockhard Competition

But in the new area of office automation the picture is different. Instead of well-defined customers (mainly national telephone monopolies) and about 10 well-known competitors, L. M. Ericsson is meeting a hoard of customers and perhaps hundreds of competitors. These come from many different branches. Some are telephone companies, others are data companies like IBM, Univac, Digital Equipment, Apple, etc. And from years back office businesses such as Olivetti and Rank Xerox. And in addition capital-rich companies from other branches--primarily Exxon.

"Together all these companies form a terrible group. The competition is going to be rockhard, but it is a matter of finding niches (which are very large areas). Our niche is primarily office exchanges, workplace terminals (mainly Alfaskop, banksystem, and lately Eritex, and advanced telex with data memory and word processing).

Many in the Swedish data branch have been doubtful if the Ericsson company can really manage that sort of sales which the market for private data and office equipment demands. But L. M. Ericsson has invested deeply in building

its sales force, said Bjorn Svedberg. He also points out that L. M. Ericsson was a large data industry before the Datasaab purchase. The LM leadership believes that it has good system knowledge, an important weapon in the fight on the data and communication market.

Several Growth Branches

Electronics is also the basis for several other branches of L. M. Ericsson activity. Besides the telephone stations and office automation, the concern has several other growth branches. Bjorn Svedberg names four first:

- 1) SRA Communications, which is now looking for 300 engineers after having doubled its sales in 3 years. SRA can even look forward to deliveries to the JAS [fighter-attack-reconnaissance] aircraft.
- 2) Mobile telephones, which have been met with great interest in the United States.
- 3) Power cable and conductors which represent a considerable part of L. M. Ericsson's sales, and when it comes to the new fiberglass technique "we are well in front."
- 4) Electronic components, which L. M. Ericsson has invested heavily in through the expanded semiconductor firm RIFA.

Thousands Without Jobs

Electronics has, however, brought with it a noticeable dilemma for L. M. Ericsson. Although new orders flow in and the annual sales total has risen from 7.8 billion kronor in 1977 to 16.2 billion in 1981 (in moving prices), thousands of LM workers have been forced to leave their jobs--and more are still out. Certainly there are new employees, but the net result is a reduction.

The question which arises is: If the profitable L. M. Ericsson can not move into electronics without giving up employees, how will it go with smaller, successful electronic firms?

"That depends upon where one begins," answered Bjorn Svedberg.

"We began with mechanical and electromechanical telephone stations. Since then we have had what some may call a technical shock. People's needs declined sharply, and that could not be compensated for with increased sales, because it required so many orders for which there was no market. If one realizes how production changes, one can understand how hopeless and inevitable the situation is.

"But other electronic firms began from the start with just electronics, and there the effects are not the same."

Increased Profits in Sight

Fewer workers but increased profits is the outlook for the next few years. After having been satisfied for a few years with profits of 7-8 percent of the sales sum, Bjorn Svedberg now expects a profit increase. He emphasizes that it is needed.

"Our deliveries often extend over 5-10 years, sometimes with a financing of over 7-10 years. With dynamic development in the world it is difficult to know in advance what can happen over so long a period. Good years follow bad. It is important to have a good average result.

"To be really successful we need a profit level which should be perhaps 50 percent above last year's."

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END